

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

**BARKAN WIRELESS IP HOLDINGS,  
L.P.,**

**Plaintiff,**

**v.**

**T-MOBILE US, INC., T-MOBILE USA,  
INC., NOKIA CORPORATION, and  
NOKIA OF AMERICA CORPORATION,**

**Defendants.**

**Civil Action No. 2:21-cv-00034-JRG**

**JURY TRIAL DEMANDED**

**AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

1. Plaintiff Barkan Wireless IP Holdings, L.P., for its Amended Complaint against T-Mobile US, Inc. and T-Mobile USA, Inc. (“T-Mobile”); and Nokia Corporation and Nokia of America Corporation (“Nokia,” and collectively with T-Mobile, “Defendants”), alleges:

**THE PARTIES**

2. Plaintiff is a Delaware limited partnership founded by Dr. Elad Barkan (“Dr. Barkan”), an Israeli computer scientist and inventor. Dr. Barkan received his Ph.D. from the Technion – Israel Institute of Technology in Haifa, Israel, and is now a researcher at the Weizmann Institute of Science, a research university in Rehovot, Israel.

3. Defendant T-Mobile US, Inc. (“T-Mobile US”) is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, Washington 98006. Plaintiff is informed and believes, and on that basis alleges, that T-Mobile US, Inc. may be served through its registered agent for service, Corporation Service Company, 2711 Centerville Rd., Ste. 400, Wilmington, Delaware 19808.

4. Defendant T-Mobile USA, Inc. (“T-Mobile USA”) is a Delaware corporation with its principal place of business at 12920 SE 38th Street, Bellevue, Washington 98006. Plaintiff is informed and believes, and on that basis alleges, that T-Mobile USA, Inc. may be served through its registered agent, Corporation Service Company, 211 E. 7th Street, Suite 620, Austin, Texas 78701.

5. Defendant Nokia Corporation (“Nokia Corp.”) is a Finnish corporation with its principal place of business at Karaportti 3, FI-02610 Espoo, Finland. Plaintiff is informed and believes, and on that basis alleges, that Alcatel-Lucent S.A. (“Alcatel-Lucent”) was merged into Nokia Corp.’s “Nokia Networks” division in 2016.

6. Defendant Nokia of America Corporation (“NAC”) is a Delaware corporation with its principal place of business at 600 Mountain Avenue, Murray Hill, NJ 07974. Plaintiff is informed and believes, and on that basis alleges, that NAC can be served with process via its registered agent, Corporation Service Company, at 251 Little Falls Drive, Wilmington DE 19808. Plaintiff is informed and believes, and on that basis alleges, that NAC is a wholly owned subsidiary of Nokia Corp.

### **JURISDICTION AND VENUE**

7. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because this action arises under the patent laws of the United States, 35 U.S.C. §§ 1 *et seq.*

8. This Court has personal jurisdiction over T-Mobile because, *inter alia*, it has done and continues to do business in Texas, and has committed and continues to commit acts of patent infringement in the state of Texas, including making, using, offering to sell and/or selling accused products in Texas, and/or importing accused products into Texas, and/or inducing others

to commit acts of patent infringement in Texas, including at regular and established physical places of business, such as retail stores.

9. Venue is proper as to T-Mobile under 28 U.S.C. § 1400(b). Plaintiff is informed and believes, and on that basis alleges, that T-Mobile has committed acts of infringement and has a regular and established place of business in this District.

10. Plaintiff is informed and believes, and on that basis alleges, that T-Mobile has a regular and established physical presence in this District, including, but not limited to, ownership of or control over property, inventory, and/or infrastructure. For example, Plaintiff is informed and believes, and on that basis alleges, that T-Mobile USA, Inc. maintains and operates research and development facilities at 7668 Warren Parkway, Frisco, Texas 75034.



*Fig. 1: Depicting T-Mobile office at 7668 Warren Parkway, Frisco, TX.*

11. Plaintiff is also informed and believes, and on that basis alleges, that T-Mobile operates a number of retail stores in this District through which it transacts business. This includes T-Mobile retail stores located at 900 E. East Blvd N #100B, Marshall, Texas 75670; and 1806 E. End Blvd. Ste. 100, Marshall, TX 75670. *See TMobile Store Locator*, T-MOBILE, <http://t-mobile.com/store-locator> (last visited Feb. 2, 2021).



*Fig. 2: Depicting T-Mobile Store at 1806 E. End Blvd. Ste. 100 (E End Blvd. N. and Lawson Street), Marshall TX 75670.*





*Fig. 3:* Depicting T-Mobile Store at 900 E. End Blvd N. # 100B (N. East End Blvd. and Karnak Hwy.), Marshall, TX 75670.

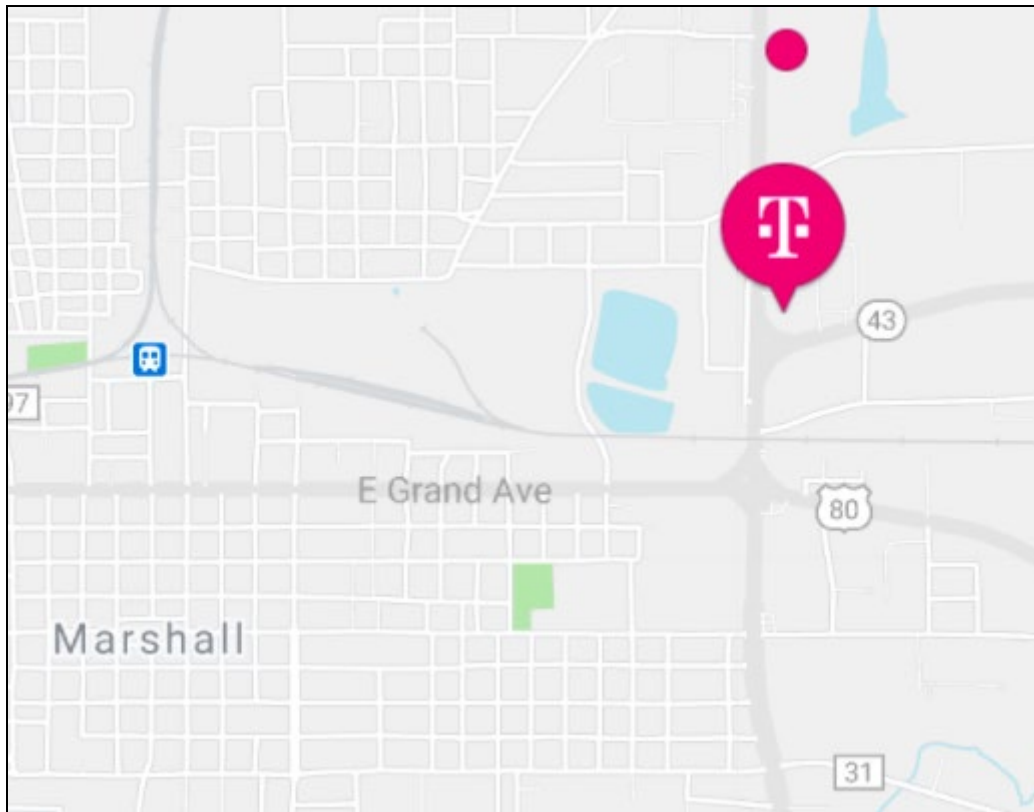


Fig. 4: Depicting locations of T-Mobile retail stores in Marshall, Texas.

12. In other recent actions, T-Mobile has either admitted or not contested that this federal judicial district is a proper venue for patent infringement actions against it. *See, e.g.*, Answer to First Amended Complaint, at 2-3, ¶¶ 7-10, *Fractus, S.A. v. AT&T Mobility LLC et al.*, No. 2:18-cv-00135-JRG (E.D. Tex. Dec. 13, 2018); Answer at 2, ¶¶ 4, 5, *Preferential Networks IP, LLC v. T-Mobile US, Inc. et al.*, No. 2:17-cv-00626 (E.D. Tex. Nov. 01, 2017), ECF No. 17; Answer ¶¶ 4, 5, *Traxcell Techs., LLC v. T-Mobile, USA, Inc.*, No. 2:17-cv-00720 (E.D. Tex. Jan. 23, 2018), ECF No. 8; Answer ¶¶ 5, 6, *Kevique Tech., LLC v. T-Mobile USA, Inc.*, No. 2:17-cv-00095 (E.D. Tex. Apr. 11, 2017), ECF No. 10. Defendant T-Mobile USA, Inc. has also admitted or failed to contest that it has transacted business in this district. *See Preferential Networks* at Answer at 2, ¶ 4; *Traxcell Techs.* at Answer ¶ 2; *Kevique Tech.* at Answer ¶¶ 5, 6. *See also*

Answer ¶¶ 19, 20, *Mobile Synergy Sols., LLC v. T-Mobile US, Inc. et al.*, No. 6:16-cv-01223 (E.D. Tex. Feb. 13, 2017), ECF No. 47.

13. T-Mobile derives benefits from its presence in this federal judicial district, including, but not limited to, sales revenue. For example, T-Mobile receives revenue from its corporate stores in this district, by selling network access, phones/products, and services and by receiving payment for its network access, phones/products, and services.

14. T-Mobile's commission of acts of infringement, and the presence of T-Mobile retail stores and offices in the Eastern District of Texas, establishes venue over it under 28 U.S.C. § 1400(b). *See, e.g., Intellectual Ventures II LLC v. FedEx Corp.*, No. 16-cv-980-JRG, 2017 WL 5630023, at \*6-\*7 (E.D. Tex. Nov. 22, 2017) (Gilstrap, J.) (venue proper based on defendants' "physical retail and service locations").

15. This Court has personal jurisdiction over Nokia because, among other things, Nokia has done and continues to do business in Texas, and has committed and continues to commit acts of patent infringement in Texas, including making, using, offering to sell and/or selling accused products in Texas, and/or importing accused products into Texas, and/or inducing others to commit acts of patent infringement in Texas. For example, Plaintiff is informed and believes that, as Nokia has recently admitted in other actions in this District, it "has offices in Texas" and "conducts business operations within the Eastern District of Texas," including a "Nokia facility in Plano, Texas that has been used as a training center," a "data center in Plano," and a "Nokia facility in Lewisville, Texas." Nokia Intervenor's Answer and Counterclaims in Intervention, ¶¶ 59-61, *IPCom GmbH & Co. v. Verizon Commc'ns Inc. et al.*, No. 2:20-cv-00323-JRG (E.D. Tex. filed Jan. 22, 2021); Nokia Intervenor's Answer and



Counterclaims in Intervention, ¶¶ 61-63, *IPCom GmbH & Co. v. AT&T Corp. et al.*, No. 2:20-cv-323-JRG (E.D. Tex. filed January 22, 2021).

16. Venue is proper as to Nokia Corp. under 28 U.S.C. § 1391(c)(3). *See* 28 U.S.C. § 1391(c)(3) (“[A] defendant not resident in the United States may be sued in any judicial district.”); *In re HTC Corporation*, 889 F.3d 1349, 1357 (Fed. Cir. 2018) (“[T]he patent venue statute was not intended to supplant the longstanding rule that the venue laws do not protect alien defendants.”).

17. Venue is proper as to NAC under 28 U.S.C. § 1400(b). Plaintiff is informed and believes, and on that basis alleges, that Nokia has committed acts of infringement and has a regular and established place of business in this District.

18. Plaintiff is informed and believes, and on that basis alleges, that NAC has a regular and established physical place of business in the Eastern District of Texas. For example, NAC has admitted that it “conducts business operations within the Eastern District of Texas”; that “there is a Nokia facility in Plano, Texas that has been used as a training center”; “that it has a data center in Plano” and that “there is a Nokia facility in Lewisville, Texas.” Nokia Intervenor’s Answer and Counterclaims in Intervention, ¶¶ 59-61, *IPCom GmbH & Co. v. Verizon Commc’ns Inc. et al.*, No. 2:20-cv-00323-JRG (E.D. Tex. filed Jan. 22, 2021); Nokia Intervenor’s Answer and Counterclaims in Intervention, ¶¶ 61-63, *IPCom GmbH & Co. v. AT&T Corp. et al.*, No. 2:20-cv-323-JRG (E.D. Tex. filed January 22, 2021).

19. NAC has also admitted that venue is proper in the Eastern District of Texas pursuant to 28 U.S.C. §§ 1391 and 1400(b) for claims of patent infringement brought against its customers, including other cellular network operators. *See, e.g.*, Nokia Intervenor’s Answer and Counterclaims in Intervention, ¶¶ 4-7, *IPCom GmbH & Co. v. Verizon Commc’ns Inc. et al.*, No.

2:20-cv-00323-JRG (E.D. Tex. filed Jan. 22, 2021) (suit filed against Nokia's customer Verizon); Nokia Intervenor's Answer and Counterclaims in Intervention, ¶¶ 4-7, *IPCom GmbH & Co. v. AT&T Corp. et al.*, No. 2:20-cv-323-JRG (E.D. Tex. filed January 22, 2021) (suit filed against Nokia's customer AT&T).

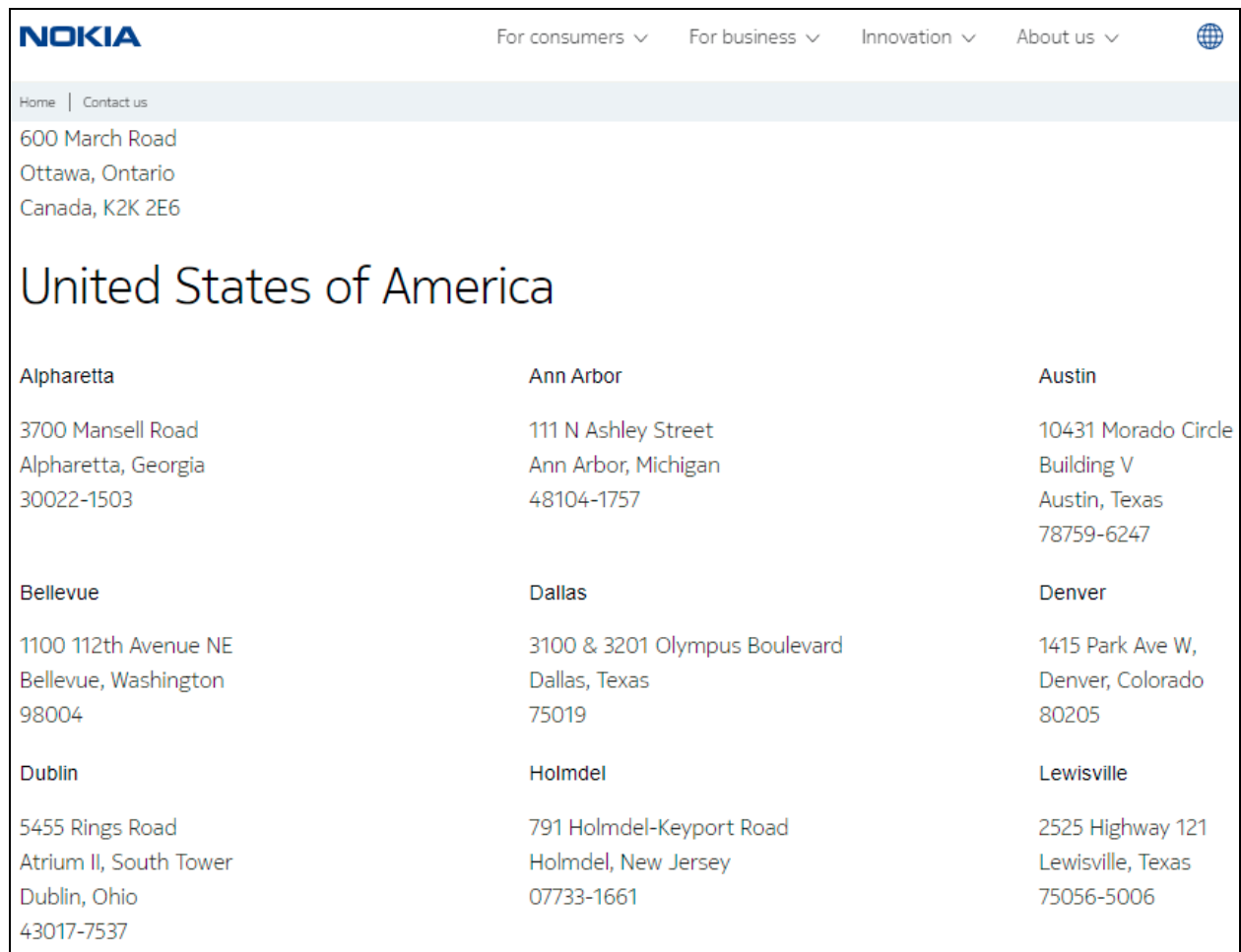


Fig. 5: NOKIA, *Our Offices*, <http://nokia.com/contact-us/offices/#north-america> (last visited Feb. 3, 2021) (depicting Nokia's advertisement of its offices in Lewisville, Texas).

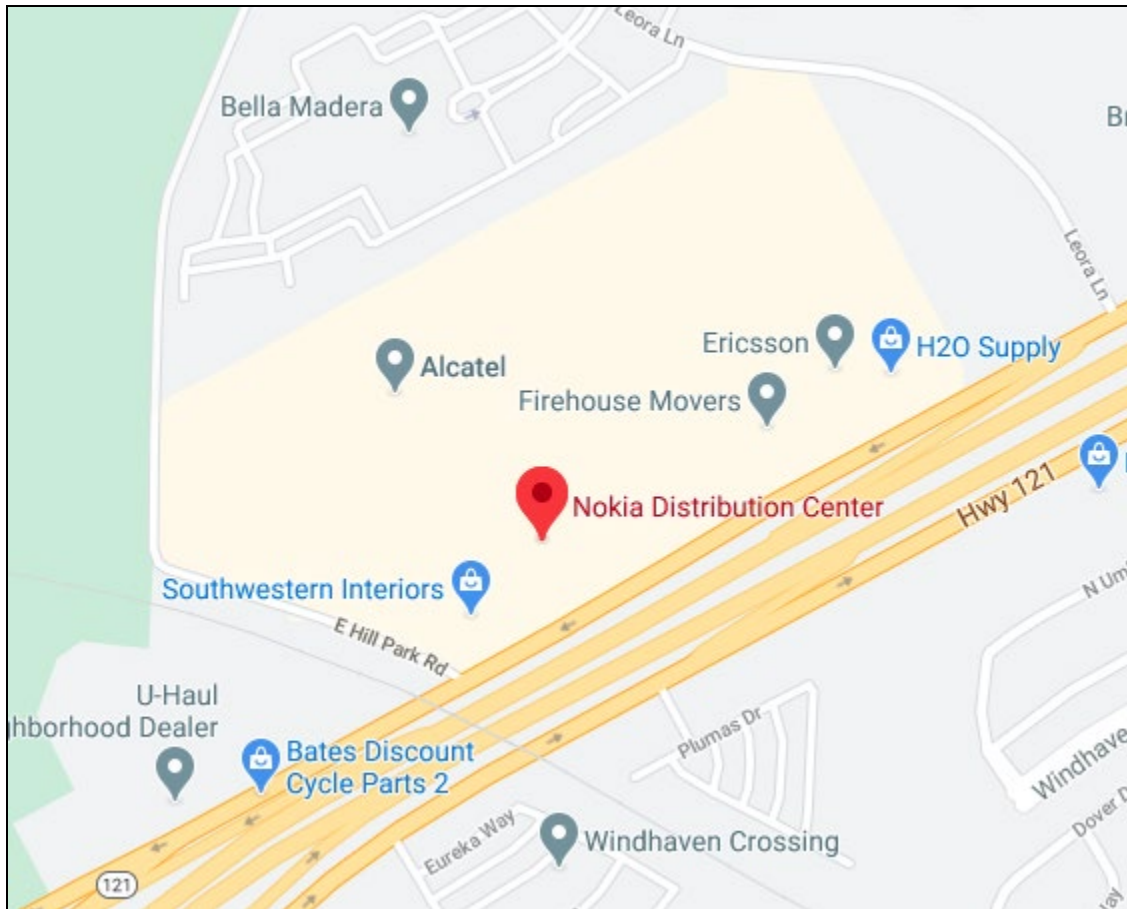


Fig. 6: Depicting location of Nokia's Lewisville, Texas facility.

20. NAC's commission of acts of infringement here, and the presence of locations from which it conducts business operations within the Eastern District of Texas, establishes venue over it under 28 U.S.C. § 1400(b). *See In re Cray, Inc.*, 871 F.3d 1355, 1362 (Fed. Cir. 2017) (describing location for venue as a "physical, geographical location in the district from which the business of the defendant is carried out").

### **SINGLE ACTION**

21. This suit is commenced against Defendants pursuant to 35 U.S.C. § 299 in a single action because (a) a right to relief is asserted against the parties jointly, severally, or in the alternative with respect to or arising out of the same transaction, occurrence, or series of transactions or occurrences relating to the making, using, importing into the United States,

offering for sale, and/or selling of the same accused products or processes and (b) questions of fact common to all defendants will arise in the action.

22. Plaintiff is informed and believes, and on that basis alleges, that T-Mobile and/or Nokia manufacture and/or sell and/or offer for sale the same products and processes accused in this action, including the “4G LTE CellSpot” and “4G LTE CellSpot v2.”

### **PATENTS-IN-SUIT**

23. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 8,559,312 (the “’312 patent”), entitled “Systems, Devices and Methods for Providing Access to a Distributed Network,” a true and correct copy of which is attached hereto as Exhibit A. The ’312 patent is designated a continuation of the application that resulted in United States Patent No. 8,014,284 (the “’284 patent”); bears a domestic filing date of July 13, 2011; and was duly and legally issued by the PTO no later than October 15, 2013. Dr. Barkan is the inventor of the ’312 patent.

24. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 9,392,638 (the “’638 patent”) entitled “Systems, Devices and Methods for Providing Access to a Distributed Network,” a true and correct copy of which is attached hereto as Exhibit B. The ’638 patent is designated a continuation of the applications resulting in the ’284 and ’312 patents; bears a domestic filing date of August 21, 2012; and was duly and legally issued by the PTO no later than July 12, 2016. Dr. Barkan is the inventor of the ’638 patent.

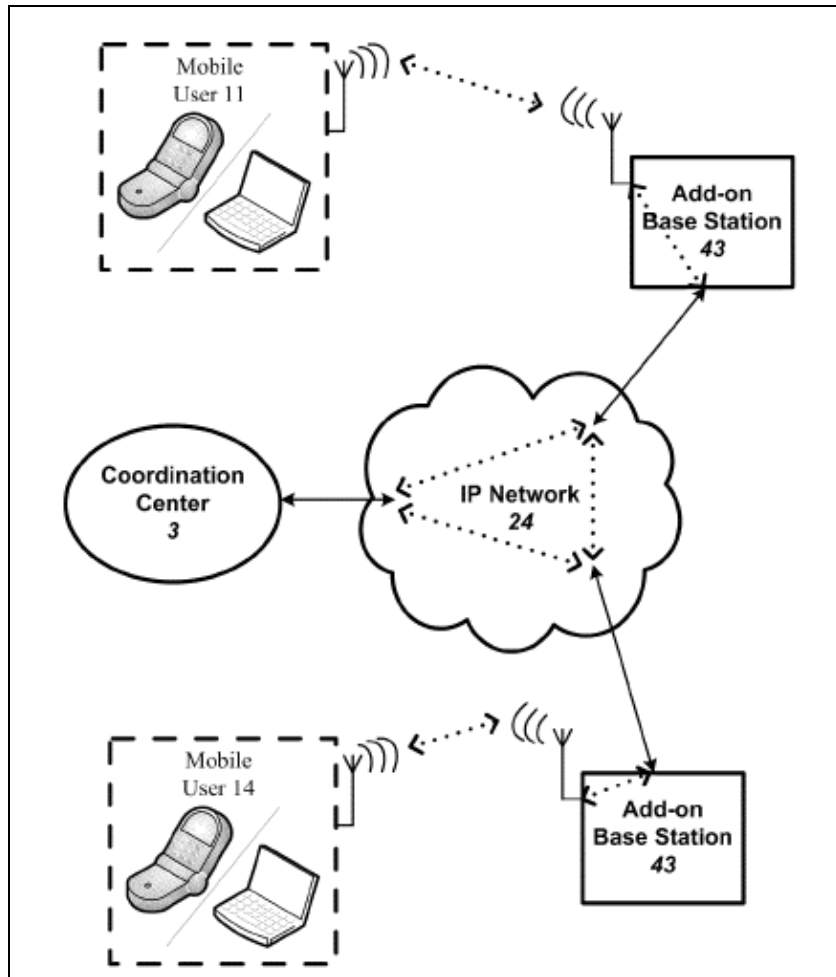
25. Plaintiff, as assignee, is the owner of all right, title, and interest in United States Patent No. 8,014,284 entitled “Systems, Devices and Methods for Providing Access to a Distributed Network,” a true and correct copy of which is attached hereto as Exhibit C. The ’284

patent bears a domestic filing date of June 4, 2001; and was duly and legally issued by the PTO no later than September 6, 2011. Dr. Barkan is the inventor of the '284 patent.

26. Collectively, the '312, '638, and '284 patents are referred to as the “patents-in-suit.”

27. At the time of the invention, it was “relatively expensive, time consuming, and difficult to install cellular networks”—especially in “highly populated urban areas.” Ex. A, '312 Patent, at 1:27-:29. Traditional cellular base stations (like cell phone towers) “require[] a large investment to install,” “service,” and “maintain,” and a high number of complicated “switchboard” systems. *Id.* at 1:47-:56. Another problem of traditional cellular infrastructure is the “relatively high transmit power” at which cell phones must transmit a signal in order to communicate with cell-phone towers. *Id.* at 1:32.

28. Plaintiff’s patents-in-suit solved many of the problems associated with traditional cellular infrastructure. Generally speaking, Plaintiff’s patents-in-suit relate to the expansion of cellular networks, in areas in which signal coverage is weak or nonexistent, using coordination centers and existing network infrastructure—such as cable television, internet, or wired telephone connections—to route cellular communications through add-on base stations in lieu of cell phone towers.



*Fig. 7:* Illustration from '312 patent of cellular communications routed through existing network infrastructure to add-on base stations.

29. Plaintiff's patents-in-suit, generally speaking, disclose systems, devices, and methods for expanding cellular coverage using a gateway, consisting of a transceiver that establishes a radio-frequency link with a mobile device; an interface that facilitates data flow between a mobile device and a packet-based data network (such as the Internet); and a connection regulator that regulates data flow between a mobile device and the data network. The information is regulated at least partly on information received over the data network from a coordination center, which connects to the data network through a second interface.

30. The patents-in-suit describe a preferred embodiment as follows:



New base station **43** illustrates yet another type of network enhancement. It generates a wireless cell that is directly connected to an Internet **24**.

Thus, new base station **43** adds a new wireless cell in a location where there is available a link to an Internet network **24**.

The system uses the existing infrastructure, for example cable TV, Internet connections and phone networks to provide additional wireless coverage. The above detailed structure and method may be used for other networks as well. These may include, among others, wireless links, satellite links, cable TV links, fiber-optics or a combination thereof.

Thus, new base stations **41**, **42**, and **43** allow to use the existing telecommunication infrastructure in developed areas, to enhance the cellular network.<sup>1</sup>

31. The systems, devices, and methods covered by the patents-in-suit—which have been implemented in, among other inventions, what are known as “femtocells”—yield substantial benefits for both consumers and telecommunications providers.

32. When using implementations of the invention, including femtocell devices, consumers benefit from increased cell signal strength; reduced cell phone battery consumption; diminished radiation exposure; higher voice communication quality; the ability to place calls on a mobile device from indoor locations, or areas of a home or business that would otherwise be inaccessible; and ease of installation.

33. Telecommunications providers benefit from, *inter alia*, access to additional consumers; increased capacity as subscribers are offloaded from cell phone towers to existing network infrastructure; and reduced expenditures due to the use of small base stations—which may be purchased and installed by consumers—in lieu of traditional cellular network infrastructure.

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<sup>1</sup> See Exhibit A, at 12; Exhibit B, at 12; Exhibit C, at 12.

34. T-Mobile has publicly trumpeted the significant benefits that the T-Mobile femtocell devices provide. For example, T-Mobile’s then-CEO John Legere describes the Accused Products as “something totally new,” and a “completely radical idea”—the idea that consumers can create coverage where they “want and need it most” even if the “carrier network doesn’t reach there.” John Legere (@JohnLegere), TWITTER (Nov. 2, 2015, 9:12 a.m.), <https://twitter.com/i/status/661184145226272768>.



*Fig. 8: T-Mobile’s then-CEO, John Legere, introducing and promoting the adoption of the “4G LTE CellSpot” Accused product.*

35. T-Mobile’s then-CEO described the accused femtocell devices as “[t]otally next gen advanced technology” that “actually *is*” a cell phone tower and that “creates a beautiful 4G

LTE signal that stretches for 3,000 square feet” so long as you have “power and an Internet connection.” *Id.* In the words of T-Mobile’s then-CEO, such devices “[g]ive[] you coverage where cellular only just can’t reach!” and are “[g]reat for businesses” to provide 4G LTE signal to employees and their customers. *Id.*

### **DEFENDANTS AND THEIR INFRINGING PRODUCTS**

36. Nokia, established in 1865, is a multinational telecommunications, information technology, and consumer electronics company. Nokia has over 90,000 employees worldwide; and annual revenues of approximately €23 billion.

37. T-Mobile is an American telecommunications company that provides wireless and internet services. T-Mobile is the third-largest wireless carrier in the United States, with over 100 million subscribers as of the end of 2020; and annual revenues of over \$40 billion.

38. Defendants make, use, offer to sell, sell and/or import into the United States products and/or systems that infringe the patents-in-suit, including, but not limited to, the “4G LTE CellSpot” and “4G LTE CellSpot v2” (the “Accused Products”).

39. Nokia, and its predecessor-in-interest Alcatel-Lucent, manufactured and/or sourced Accused Products, including the 4G LTE CellSpot.

40. Nokia manufactured and/or sourced Accused Products, including the 4G LTE CellSpot v2.

41. T-Mobile sells and/or distributes the Accused Products to its customers, including through its website.



Fig. 9: T-Mobile markets the Accused Products, including the “4G LTE CellSpot,” through its website. See T-MOBILE, *4G LTE CellSpot Quick Start Guide*, at 1, available at <https://www.t-mobile.com/support/public-files/images/support-non-device/4G%20LTE%20CellSpot%20Quick%20Start%20Guide.pdf> (last visited Feb. 1, 2021) [hereinafter, “4G LTE CellSpot QuickStart Guide”].

42. T-Mobile touts the Accused Products as a means of expanding access to T-Mobile cellular service using T-Mobile coordination centers and existing network infrastructure—such as a broadband Internet connection—by routing cellular communications through add-on base stations in lieu of cell phone towers.

43. For example, according to T-Mobile, the Accused Products are a “powerful, simple way to create your own personal T-Mobile 4G LTE mini-tower in your home or small business office” and “can provide full bars indoor 4G LTE coverage, more dependable voice calls and more consistent data speeds.” 4G LTE CellSpot QuickStart Guide, at 1.

44. The Accused Products include, as disclosed by Plaintiff’s patents, a gateway to a packet-based data network comprising: a transceiver adapted to establish a radio frequency link

with a mobile device; a connector to a packet based data network; and a connection regulator that is adapted to facilitate data flow between the mobile device and the packet-based data network, wherein the gateway is adapted to determine its own physical location.

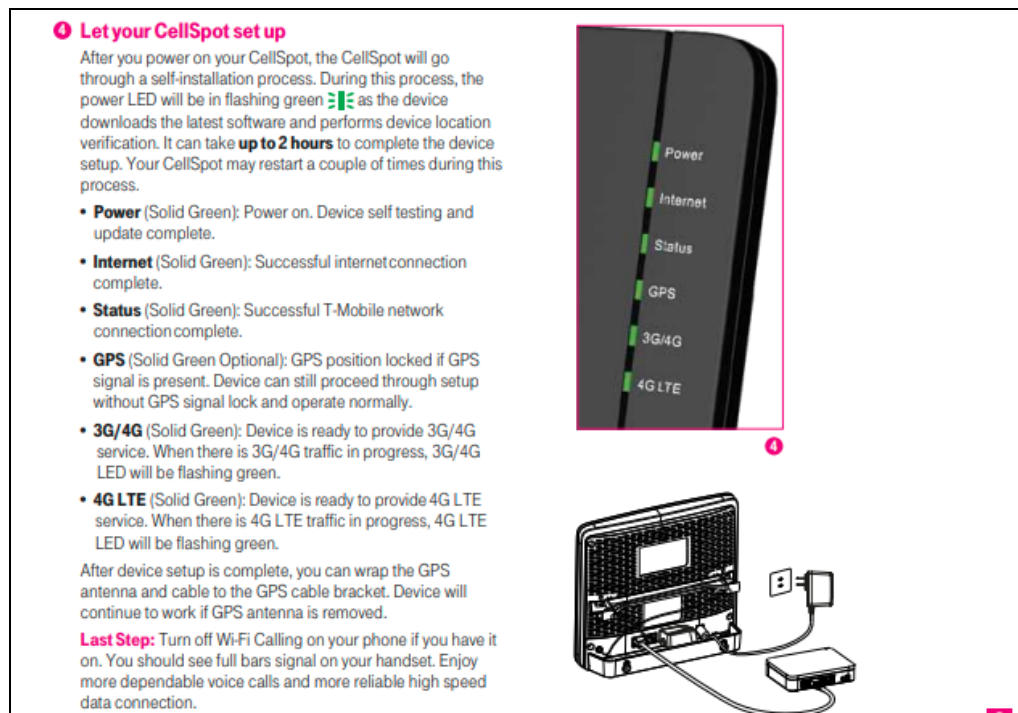


Fig. 10: 4G LTE CellSpot QuickStart Guide, at 3. Illustrating the 4G LTE CellSpot's ability to provide "3G/4G" and "4G/LTE" cellular signals to and from a mobile device. ("Device is ready to provide 3G/4G service. . . . Device is ready to provide 4G LTE Service.").



Fig. 11: 4G LTE CellSpot QuickStart Guide, at 2. Illustrating the 4G LTE CellSpot’s connection to a packet-based data network such as the Internet (“Yellow WAN Port (Connect to Wi-Fi router or Wi-Fi cable modem router.)”).





*Fig. 12: Illustrating microprocessors used to facilitate data flow (from a tear-down of the T-Mobile 4G LTE CellSpot v2) (FCC ID H7NSS2FII).*

**1 Connect your CellSpot to the Internet**

Connect the yellow Ethernet cable from the "WAN" yellow port on your CellSpot to an available Ethernet port on your Wi-Fi router or Wi-Fi cable modem router.

To reduce device setup time, stop using high Internet bandwidth consuming applications, such as video streaming, during CellSpot device setup process.

Recommend a minimum Internet speed of 2 Mbps download and 500 Kbps upload for reliable product performance.

**2 Connect GPS antenna to the CellSpot**

Connect the GPS antenna cable to the GPS port. Position the antenna as close to a window as possible.

Device can still proceed through setup without GPS antenna connection. However, GPS antenna connection helps reduce device setup time and improves device location accuracy.

**3 Power on your 4G LTE CellSpot**

Connect the power cable to the CellSpot power port, then plug in your AC power adaptor into the power outlet.

Install the device stand or wall mount after all cable connections are complete. This helps ensure the device has sufficient ventilation.

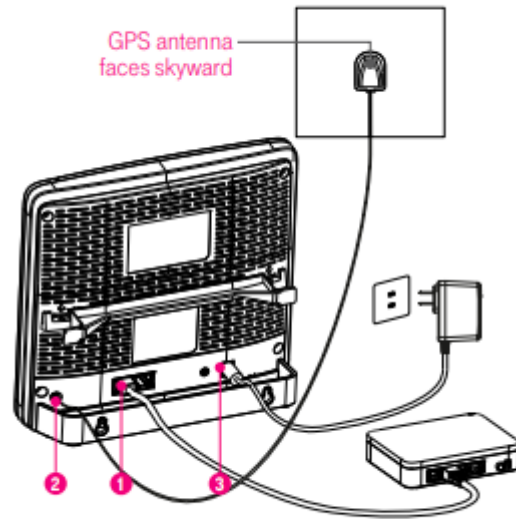


Fig. 13: 4G LTE CellSpot QuickStart Guide, 3. Illustrating the 4G LTE CellSpot's location-determination functionality (“(2) Connect GPS antenna to the CellSpot. Connect the GPS antenna as close to a window as possible.”).

**COUNT I****INFRINGEMENT OF U.S. PATENT NO. 8,559,312**

45. Plaintiff incorporates by reference Paragraphs 1 through 44 above.

46. Defendants have infringed and continue to infringe the '312 patent in violation of 35 U.S.C. § 271, directly and/or indirectly, either literally or through the doctrine of equivalents, by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the '312 patent.

47. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 1 of the '312 patent, which discloses a “gateway to a packet-based data network comprising: a transceiver adapted to establish a radio frequency link

with a mobile device; a connector to a packet based data network; and a connection regulator adapted to facilitate data flow between the mobile device and the packet-based data network; wherein said gateway is adapted to determine a physical location of said gateway.”<sup>2</sup> See Fig. 11.

### CellSpot Device in Stand

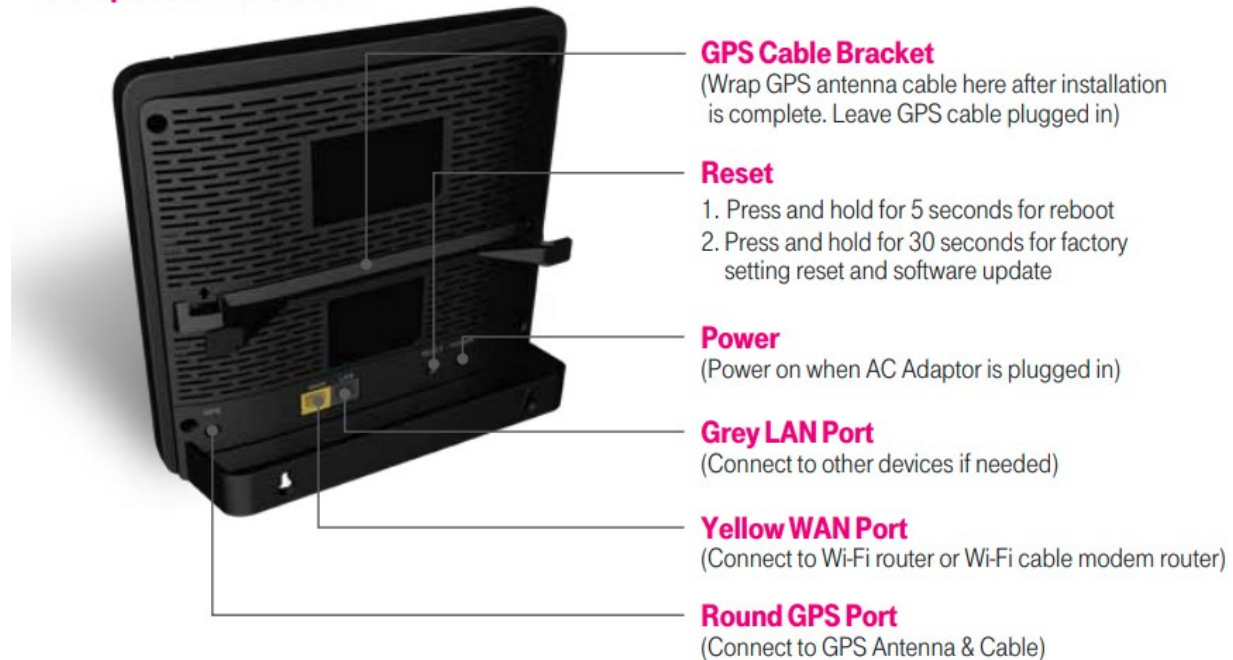
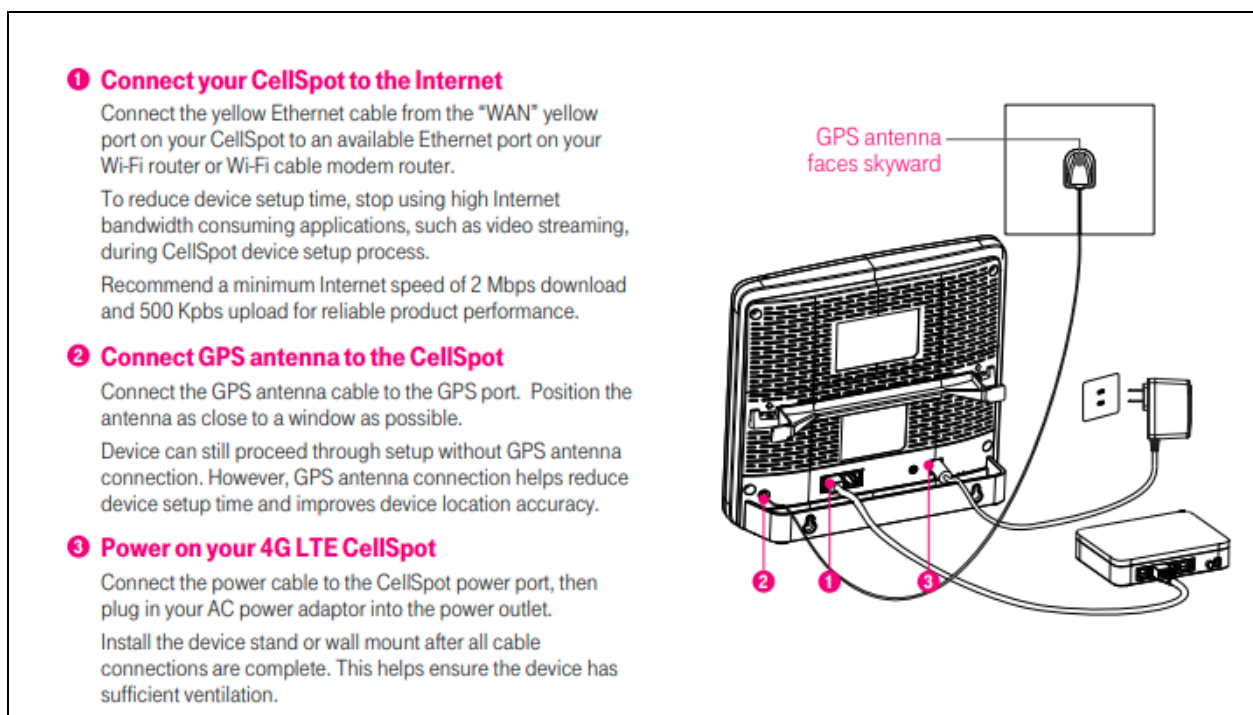


Fig. 14: T-Mobile 4G LTE CellSpot QuickStart Guide, at 2. Illustrating the 4G LTE CellSpot’s functionality of transmitting data from a cell phone to, for example, the Internet (through a “WAN Port”).

<sup>2</sup> Exhibit A, at 18.

Devices supported	T-Mobile and non-T-Mobile (BYOD) devices that can connect to the T-Mobile network's 3G, 4G, or 4G LTE
Technologies	4G LTE:
frequencies	<ul style="list-style-type: none"> <li>• Band 2 (1900 MHz) (V2 model only)</li> <li>• Band 4 (2100 MHz) (V1 &amp; V2 models)</li> <li>• Includes VoLTE</li> </ul> <p>UMTS/WCDMA/HSPA Band 2 (1900 MHz)</p> <p>No 2G bands</p> <p>Data speeds</p> <ul style="list-style-type: none"> <li>• Speeds cannot exceed your Internet provider's (ISP) data speed.</li> <li>• Speed varies based on the connection, device, and simultaneous voice/data sessions.</li> <li>• In testing, we've seen up to 60 Mbps down and up to 20 Mbps up.</li> </ul> <p>This will not interfere with Wi-Fi routers.</p> <ul style="list-style-type: none"> <li>• Wi-Fi operates at the frequencies of 2.4GHz or 5GHz.</li> <li>• The CellSpot operates at the 1900MHz and 2100MHz frequencies.</li> </ul>

Fig. 15: TMOBILE, *Support: 4G LTE CellSpot*, available at <https://www.t-mobile.com/support/coverage/4g-lte-cellspot> (last visited Feb. 1, 2021) (depicting cellular frequencies over which transceiver of 4G LTE CellSpot communicates with a mobile device).



*Fig. 16: T-Mobile 4G LTE CellSpot QuickStart Guide, at 3 (depicting 4G LTE CellSpot functioning as a gateway to, for example, the Internet (“Connect your CellSpot to the Internet”).*

48. Where acts constituting direct infringement of the '312 patent are not performed by Defendants, such acts constituting direct infringement of the '312 patent are performed by Defendants' customers or end-users who act at the direction and/or control of Defendants, with Defendants' knowledge.

49. Plaintiff is informed and believes, and on that basis alleges, that Defendants are indirectly infringing one or more claims of the '312 patent by active inducement in violation of 35 U.S.C. § 271(b), by at least manufacturing, supplying, distributing, selling and/or offering for sale the Accused Products to their customers with the knowledge and intent that use of those products would constitute direct infringement of the '312 patent.

50. For example, Defendants direct their customers how to install the Accused Products, including connecting it to, for example, the Internet; connecting the power supply; and connecting a GPS antenna for determining the Accused Product's physical location.



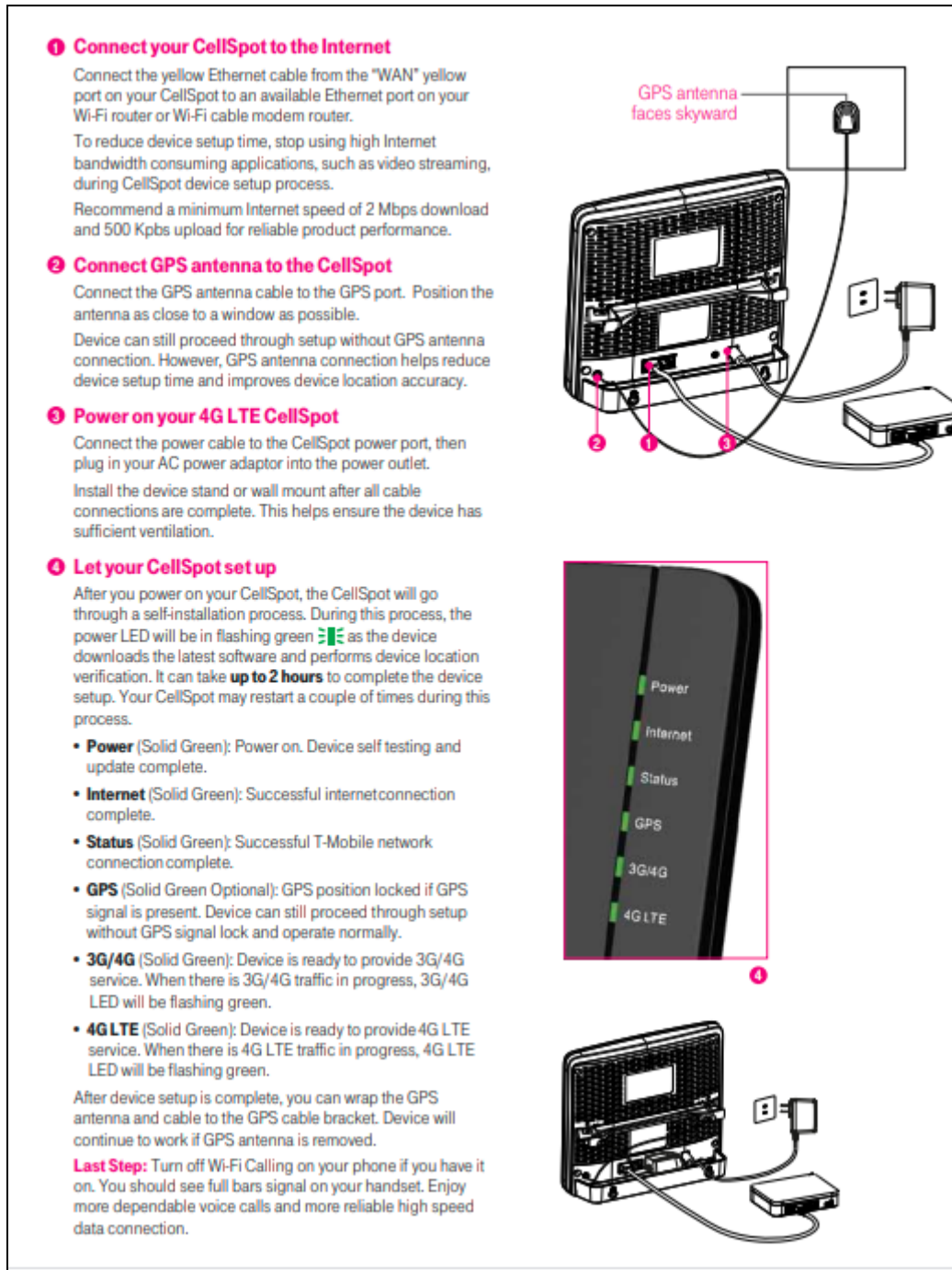


Fig. 17: 4G LTE CellSpot Quick Start Guide, at 3. Instructing consumers on how to install the Accused Products.

51. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '312 patent by contributory infringement in



violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '312 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

52. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

## **COUNT II**

### **INFRINGEMENT OF U.S. PATENT NO. 9,392,638**

53. Plaintiff incorporates by reference Paragraphs 1 through 52 above.

54. Defendants have infringed and continue to infringe the '638 patent in violation of 35 U.S.C. § 271, directly and/or indirectly, either literally or through the doctrine of equivalents, by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the '638 patent.

55. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 1 of the '638 patent, which discloses an "add-on base station comprising: a transceiver adapted to establish a radio-frequency link with a mobile device; a first interface, separate from said transceiver, that is adapted for communication over the public Internet; a controller adapted to: determine current geographical location data for the add-on base station using a global positioning system (GPS) device included in the add-on base station, wherein the current geographical location data includes location data determined by the

GPS device; transmit recurrent updates regarding current operating parameters to a server of a server system via the public Internet, wherein the current operating parameters include current geographical location data and the server system is adapted to identify the base station based on a unique property stored in a tamper-free unit of the add-on base station and to track the add-on base station based on the identification; obtain, from a server of the server system accessed via the public Internet, gateway Internet Protocol (IP) address for a remote gateway that includes a first interface to the public Internet and a second interface communicably coupled to a network of a telephone service provider; route, using the gateway IP address, data from the mobile device, over the public Internet, to the remote gateway; and wherein the add-on base station has transmission power lower than transmission power of convention base stations and produces a cell smaller than macrocells of conventional base stations, and wherein the server system is adapted to authorize and de-authorize add-on base stations to route data to the remote gateway through the public Internet by recurrently issuing an operating license for the add-on base station.”

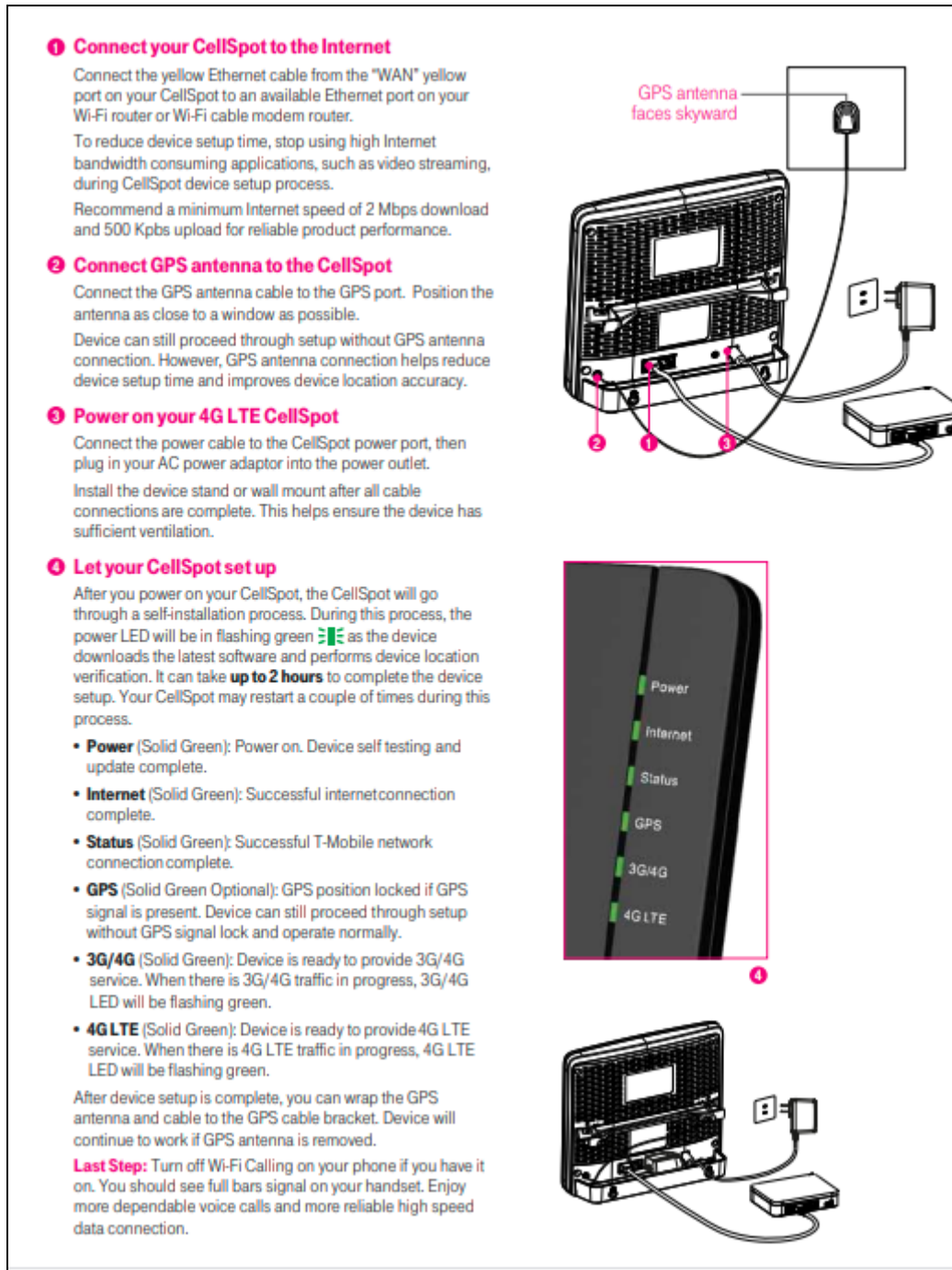


Fig. 18: 4G LTE CellSpot Quick Start Guide, at 3. Depicting the 4G LTE CellSpot as an add-on base station comprising a transceiver for establishing a radio-frequency link with a mobile device; interface for communicating over, for example, the Internet; and a controller adapted to determine the current geographical location data for the add-on base station using a global positioning system ("GPS antenna").















Issue Description and Resolution	Power	Internet	Status	GPS	3G/4G	4G LTE
Device has a hardware issue. Contact T-Mobile for resolution.	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange
Device unable to capture GPS signal. Without GPS signal lock, device is still able to proceed through setup and operate normally. You may receive SMS or email notification from T-Mobile to verify your device use address for emergency 911 call safety.	Any	Any	Any	 Flashing Green	Any	Any
Device connection issue with the Wi-Fi router or Wi-Fi cable modem router. Check Wi-Fi router or Wi-Fi cable modem router connection. Flashing green light above 4G LTE CellSpot WAN port means good Internet connection and traffic in progress.	 Flashing Green	 Solid Orange	Off	Any	Off	Off
Device is unable to reach T-Mobile network. Check with Internet Service Provider on network settings. Ensure ports UDP 500, UDP 4500 and UDP 123 are opened. Check your internet connectivity.	 Flashing Green	 Flashing Orange	Off	Any	Off	Off
Unable to activate the device with T-Mobile network. Contact T-Mobile for resolution.	 Flashing Green	 Solid Green	 Solid or Flashing Orange	Any	Off	Off

Fig. 19: 4G LTE CellSpot QuickStart Guide, at 4. Depicting 4G LTE CellSpot transmitting updates regarding current operating parameters, including, for example, location data.

## Register the address of use

The 4G LTE CellSpot has to check its location when it sets up. If you need to register or update the address of use, follow these steps:

1. Go to: <https://my.t-mobile.com/home.html>
2. Sign in with your T-Mobile account.
3. Click **Profile** in the upper right.
4. Click **Coverage devices** in the bottom left.
5. In the "Customer device use address box," click **Edit**.
6. Update the address information.
7. Click **Save**.

Fig. 20: TMOBILE, *Support: 4G LTE CellSpot setup & help*, <http://t-mobile.com/support/coverage/4g-lte-cellspot-setup-and-help> (last visited Feb. 1, 2021) (depicting that each 4G LTE CellSpot must be uniquely associated with a given user).

feature). I called t-Mobile and was escalated up to 3rd tier support for business. The rep indicated that removing the GPS will brick the device because it triggers the "tamper alarm". I read to the rep the quick-start guide where it even states that wrapping up the GPS wire (and even removing it) is acceptable and that the device will continue to function (since it should be storing the GPS location anyway). Well, he

*Fig. 21: WHITESITES WEB DESIGN BLOG, [http://blog.whitesites.com/Tmobile-4G-LTE-Cellspot-review\\_\\_635833812545197745\\_blog.htm](http://blog.whitesites.com/Tmobile-4G-LTE-Cellspot-review__635833812545197745_blog.htm) (last visited Feb. 1, 2021). Depicting the use of a "tamper alarm" in the 4G LTE CellSpot.*

56. Plaintiff is informed and believes, and on that basis alleges, that Defendants are indirectly infringing one or more claims of the '638 patent by active inducement in violation of 35 U.S.C. § 271(b), by at least manufacturing, supplying, distributing, selling and/or offering for sale the Accused Products to their customers with the knowledge and intent that use of those products would constitute direct infringement of the '638 patent.

57. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '638 patent by contributory infringement in violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '638 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

58. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

### COUNT III

#### **INFRINGEMENT OF U.S. PATENT NO. 8,014,284**

59. Plaintiff incorporates by reference Paragraphs 1 through 58 above.

60. Defendants have infringed and continue to infringe the '284 patent in violation of 35 U.S.C. § 271, directly and/or indirectly, either literally or through the doctrine of equivalents, by at least manufacturing, supplying, distributing, selling and/or offering for sale products and/or systems, including the Accused Products, and/or by contributing to or inducing infringement with others with the intent to cause infringement of the '284 patent.

61. For example, as set forth in the preceding paragraphs, Defendants have infringed and continue to infringe at least claim 15 of the '284 patent, which discloses a “communication system comprising a coordination center connected to a packet based data network through a first interface, two or more gateways functionally associated with a packet based data network, wherein each gateway comprises a transceiver adapted to establish a radio-frequency link with a mobile device; a second interface adapted to facilitate data flow between the mobile device and the data network; and a controller adapted to regulate data flow between the mobile device and the data network based, at least partially, on information received over the data network from said coordination center” wherein “said gateways further comprise a unique identity achieved by a unique number or digital document” and “said unique number or digital document contains an encryption key; and said controllers are further adapted to conduct encrypted communications with said center.”

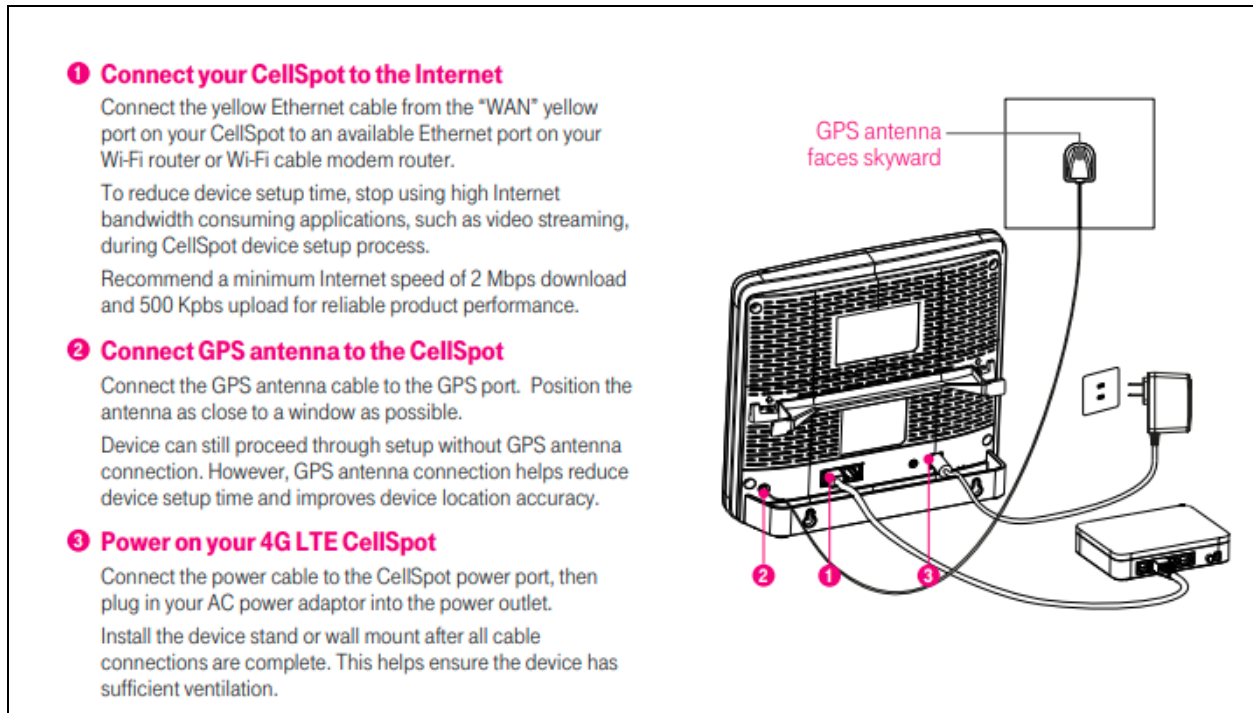


Fig. 22: T-Mobile 4G LTE CellSpot QuickStart Guide, at 3. Depicting 4G LTE CellSpot functioning as a gateway to, for example, the Internet (“Connect your CellSpot to the Internet.”).

Issue Description and Resolution	Power	Internet	Status	GPS	3G/4G	4G LTE
Device has a hardware issue. Contact T-Mobile for resolution.	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange	 Solid Orange
Device unable to capture GPS signal. Without GPS signal lock, device is still able to proceed through setup and operate normally. You may receive SMS or email notification from T-Mobile to verify your device use address for emergency 911 call safety.	Any	Any	Any	 Flashing Green	Any	Any
Device connection issue with the Wi-Fi router or Wi-Fi cable modem router. Check Wi-Fi router or Wi-Fi cable modem router connection. Flashing green light above 4G LTE CellSpot WAN port means good Internet connection and traffic in progress.	 Flashing Green	 Solid Orange	Off	Any	Off	Off
Device is unable to reach T-Mobile network. Check with Internet Service Provider on network settings. Ensure ports UDP 500, UDP 4500 and UDP 123 are opened. Check your internet connectivity.	 Flashing Green	 Flashing Orange	Off	Any	Off	Off
Unable to activate the device with T-Mobile network. Contact T-Mobile for resolution.	 Flashing Green	 Solid Green	 Solid or Flashing Orange	Any	Off	Off



Fig. 23: 4G LTE CellSpot QuickStart Guide, at 4. Depicting 4G LTE CellSpot communicating with T-Mobile servers using the Internet/WAN connection.

## Register the address of use

The 4G LTE CellSpot has to check its location when it sets up. If you need to register or update the address of use, follow these steps:

1. Go to: <https://my.t-mobile.com/home.html>
2. Sign in with your T-Mobile account.
3. Click **Profile** in the upper right.
4. Click **Coverage devices** in the bottom left.
5. In the "Customer device use address box," click **Edit**.
6. Update the address information.
7. Click **Save**.

Fig. 24: TMOBILE, *Support: 4G LTE CellSpot setup & help*, <http://t-mobile.com/support/coverage/4g-lte-cellspot-setup-and-help> (last visited Feb. 1, 2021) (depicting that each CellSpot must have unique identification features).

## Open ports

### UDP ports

For the 4G LTE CellSpot to work, UDP ports 123, 500, and 4500 must be open.

Contact your Internet provider (ISP) to ask if these ports are blocked. If these are blocked, you must ask your ISP to open these ports.

- No port forwarding is needed.
- These ports are used for:
  - UDP 123: Syncing clocks
  - UDP 500/4500: VPN or IPSec tunnels, business application
- If your ISP confirms the ports are open, ask them to add the CellSpot to a DMZ.

Fig. 25: TMOBILE, *Support: 4G LTE CellSpot setup & help*, <http://t-mobile.com/support/coverage/4g-lte-cellspot-setup-and-help> (last visited Feb. 1, 2021)

(depicting use of IPsec (Internet Protocol Security) protocol suite for securing IP-based communications using encryption).

62. Plaintiff is informed and believes, and on that basis alleges, that Defendants also indirectly infringe one or more claims of the '284 patent by contributory infringement in violation of 35 U.S.C. § 271(c). Defendants are aware that components of the Accused Products are a material and substantial part of the invention claimed by the '284 patent, and that they are designed for a use that is both patented and infringing, and that has no substantial non-infringing uses.

63. Defendants' acts of infringement have caused damage to Plaintiff, and Plaintiff is entitled to recover from Defendants (or any successor entity to Defendants) the damages sustained by Plaintiff as a result of Defendants' wrongful acts in an amount subject to proof at trial.

### **WILLFUL INFRINGEMENT**

64. Plaintiff incorporates by reference Paragraphs 1-63 above.

65. From at least as early as the filing of this Complaint, Defendants have been on notice of their infringement of the patents-in-suit.

66. Defendants' infringement of any or all of the patents-in-suit is willful and deliberate, entitling Plaintiff to increased damages under 35 U.S.C. § 284 and to attorneys' fees and costs incurred in prosecuting this action under 35 U.S.C. § 285.

67. Plaintiff is informed and believes, and on that basis alleges, that T-Mobile became aware of a prior suit by Plaintiff against Sprint—now one of T-Mobile's subsidiaries—over infringing femtocell products similar to the Accused Products in this action. *See Barkan v. Sprint*, No. 2:19-cv-00336 (E.D. Tex. filed Oct. 14, 2019) [hereinafter "*Barkan v. Sprint*"]. Regardless, because T-Mobile acquired Sprint during the pendency of the *Barkan v. Sprint*

litigation, Sprint’s knowledge of the Patents-in-Suit, including throughout that litigation, can be imputed to T-Mobile. *Cf. Carl Zeiss Vision Int’l Gmbh v. Signet Armorlite, Inc.*, 2009 WL 4642388, at \*4 (S.D. Cal. Dec. 1, 2009) (rejecting irrelevance argument regarding “[predecessor’s] knowledge of patents, before its merger into [party]”). In fact, the Sprint employees from whom discovery was taken regarding the asserted patents in *Barkan v. Sprint* were T-Mobile employees by the time of their document collections and/or depositions.

68. Plaintiff is also informed and believes, and on that basis alleges, that T-Mobile has been aware of the August 12, 1999 Israeli PCT application (IL99/00438), to which the asserted patents claim priority, since at least the prosecution of application DE102007044972A1, which was filed by T Mobile International AG—an affiliate of T-Mobile—on September 19, 2007. In the course of that application, Dr. Barkan’s PCT application was cited as prior art, and T-Mobile International AG’s patent application was subsequently withdrawn.

☆ **DE102007044972A1** Data connection establishing method for use between Internet and mobile radio terminal in mobile radio network, involves establishing connection between terminal and computer network when terminal identifier corresponds to preset identifier

Citations ▾

**Cited documents** < DE102007044972A1 ▾ < **Citing documents** CCD ↗

Publication	Earliest priority date	Publication date	Applicants	Title	IPC	CPC	Citation origi
<b>WO0113659A1</b>	1999-08-12	2001-02-22	BARKAN ELAD [IL]	ADD-ON BASE STATION FOR CELLULAR NETWORK EXPANSION	H04W16/16, H04W88/08, H04W84/10	H04B17/318 (US), H04L12/2856 (US), H04M7/0066 (US), H04W4/24 (EP,US), H04W48/16 (US), H04W64/003 (US),	SEA

Fig. 26: Depicting T-Mobile patent application citing to Dr. Barkan’s Israeli PCT application, to which the asserted patents claim priority.

69. Plaintiff is also informed and believes, and on that basis alleges, that Nokia has been aware of the '284 Patent since at least the prosecution of U.S. Patent Application US11/170,099, which was assigned to Nokia from 2005 (when the application was first filed) until approximately 2017. During the prosecution of that application, Nokia cited Dr. Barkan's published patent application for the '284 Patent (US 2001/0039197 A1) as prior art.

(12) <b>United States Patent</b> <b>Wu et al.</b>	(10) <b>Patent No.:</b> <b>US 7,385,947 B2</b> (45) <b>Date of Patent:</b> <b>Jun. 10, 2008</b>
(54) <b>LOW-COST RADIO ACCESS NETWORK ENABLING LOCAL SWITCHING</b>	6,094,686 A * 7/2000 Sharma ..... 709/240 6,463,034 B1 * 10/2002 Abrol et al. .... 370/229 6,542,497 B1 * 4/2003 Curry et al. .... 370/352 6,597,912 B1 7/2003 Lu et al.
(75) Inventors: <b>Michael Wu</b> , Austin, TX (US); <b>Petteri Alinikula</b> , Helsinki (FI); <b>Rajesh Chandra Bansal</b> , Acton, MA (US); <b>Mika Skarp</b> , Espoo (FI); <b>Ram Gopal Lakshmi Narayanan</b> , San Diego, CA (US)	<b>2001/0039197 A1 11/2001 Barkan</b> 2002/0141358 A1 10/2002 Requena
(73) Assignee: <b>Nokia Corporation</b> , Espoo (FI)	FOREIGN PATENT DOCUMENTS EP 0 797 319 A2 9/1997 WO WO 2004/002177 A1 12/2003
(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 497 days.	* cited by examiner Primary Examiner—Nghi H. Ly (74) Attorney, Agent, or Firm—Squire, Sanders & Dempsey LLP
(21) Appl. No.: <b>11/170,099</b>	


FORM PTO-1449		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTY. DOCKET NO. 47092.00123	SERIAL NO. 11/170,099		
 <b>LIST OF REFERENCES CITED BY APPLICANT</b> (Use several sheets if necessary)				APPLICANT Michael WU et al.			
				FILING DATE June 30, 2005	GROUP 2661		
<b>U.S. PATENT DOCUMENTS</b>							
EXAMINER INITIAL		DOCUMENT NO.	DATE	NAME	CLASS	SUB- CLASS	FILING DATE
/NL/	AA	2001/0039197	November 8, 2001	Barkan	/	/	
/NL/	AB	2002/0141358 A1	October 3, 2002	Requena	/	/	
/NL/	AC	6,597,912 B1	July 22, 2003	Lu et al.	/	/	

Fig. 27: Nokia cited Dr. Barkan's '284 Patent application as prior art (highlighting added).

70. Defendants have deliberately and willfully infringed the patents-in-suit despite the objectively high likelihood that their actions constitute patent infringement.

**JURY DEMAND**

71. Plaintiff demands a trial by jury on all issues.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiff Barkan Wireless IP Holdings, L.P. requests entry of judgment in its favor and against Defendants T-Mobile US, Inc., T-Mobile USA, Inc., Nokia Corporation, and Nokia of America Corporation, as follows:

- a) Declaration that Defendants have infringed United States Patent Nos. 8,559,312, 9,392,638, and 8,014,284;
- b) Declaration that Defendants' infringement has been willful;
- c) Awarding damages, in an amount no less than a reasonable royalty, arising out of Defendants' infringement of United States Patent Nos. 8,559,312, 9,392,638, and 8,014,284 to Plaintiff, including enhanced damages pursuant to 35 U.S.C. § 284, together with prejudgment and post-judgment interest, in an amount according to proof;
- d) An award of attorney's fees pursuant to 35 U.S.C. § 285 or as otherwise permitted by law; and
- e) For such other costs and further relief as the Court may deem just and proper.

DATED: February 4, 2021

Respectfully submitted,

/s/ Max L. Tribble, Jr.

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